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#### ABSTRACT OF THE DISCLOSURE

The present invention relates to ATP diphosphohydrolases (ATPDase) and more particularly to ATPDases isolated from bovine aorta and/or pig pancreas. These ATPDases have a molecular weight of about 78 and 54 Kilodaltons, respectively. The invention also relates to a process for purifying any ATPDase. The process allows an increase in the specific activity of ATPDase of at least 10,000 fold as compared to that in the crude cell homogenates. The bovine and porcine ATPDases purified by this process are glycosylated and, when deglycosylated, have their molecular weights shifted to about 56 and 35 Kdaltons, respectively. Partial amino acid sequences from these enzymes enabled the identification of a human homolog of ATPDase, the lymphoid cell activation antigen named CD39. This is thus the first ATPDase sequence which enable a process for producing ATPDases by recombinant technology.